

Appln. No.: 10/565,768
Amendment Dated: July 16, 2008
Reply to Office Action of: April 29, 2008

MAT-8806US

Remarks/Arguments:

The present invention relates to an antenna switch module for switching antennas. Specifically, the length of an adjustment line within the switch is adjusted for altering impedances.

On page 2, the Official Action rejects claims 1-11 under 35 U.S.C. § 112 as being indefinite. Specifically, the Examiner states that claim 1 recites the limitation "*wherein the filter and the antenna switch are directly connected with each other at a connection point.*" The Examiner states that there is insufficient support for this claim limitation. The Examiner also states that this claim limitation contradicts the claim limitation "*an adjustment line connected between the filter and the antenna switch circuit.*" Thus, Applicants have amended claim 1 to recite the relationship between the connection point and the adjustment line. Specifically, the connection point is now recited to be on the adjustment line.

On page 3, the Official Action rejects claims 1 and 11 under 35 U.S.C. § 103(a) as being unpatentable over Ishizaki et al. (U.S. 2003/0076195) in view of Yamazaki et al. (U.S. 2002/0113666). It is respectfully submitted, however, that the claims are patentable over the art of record for the reasons set forth below.

Ishizaki et al. teaches a filter and the antenna duplexer in a communication apparatus. Specifically, Ishizaki teaches a directional coupler attached to the antenna switch. Yamazaki teaches a directional coupler. Specifically, Yamazaki teaches adding a low pass filter to the directional coupler to cancel harmonics.

Applicants' invention, as recited by claim 1, includes a feature which is neither disclosed nor suggested by the art of record, namely:

... an adjustment line conductor of a set length ... the set length of the adjustment line conductor adjusting properties at harmonic frequencies of the fundamental frequencies ... the set length of the adjustment line conductor prevents the first impedance and the second impedance from becoming complex conjugates of each other at the harmonic frequencies, wherein the first impedance and the second impedance are measured from the connection point.

Claim 1 recites a set length of the adjustment line conductor that is set to ensure that the impedance of the filter is not the complex conjugate of the impedance of the antenna switch when measured from the common connection point. This feature is found on page 15, lines 10-17 of the specification. No new matter has been added.

In Fig. 7, Ishizaki suggests a directional coupler 13 which is connected to the antenna switch 4. In similar art, paragraph 56 of Yamazaki teaches a low pass filter for cancelling various harmonics (*"adding the function of a low pass filter for cancelling harmonics spurious to a directional coupler"*). Ishizaki and Yamazaki, however, do not teach a set length of an adjustment line. Specifically, Ishizaki and Yamazaki do not teach the length of an adjustment line being set to ensure the impedance of a filter is not the complex conjugate of the impedance of an antenna switch.

Applicants' claim 1 is different than Ishizaki and Yamazaki, because of the specifically set length of the adjustment line conductor (*"the set length of the adjustment line conductor prevents the first impedance and the second impedance from becoming complex conjugates of each other at harmonic frequencies of the fundamental frequencies, wherein the first impedance and the second impedance are measured from the connection point"*). This feature is supported on page 5, lines 5-20 of the specification, where the adjustment line conductor is connected between the filter and the antenna switch by a connection point (*"the adjustment line is connected between the filter and the antenna switch circuit, ... when the filter and antenna switch circuit are directly connected with each other at the connection point, the adjustment line prevents the impedance when the filter is seen from the connection point and the impedance when the antenna switch circuit is seen from the connection point from becoming complex conjugates of each other at the harmonic frequencies"*). Setting the length of the adjustment line conductor is supported on page 15, lines 10-17 of the specification (*"the length of the adjustment line 13D is changed to avoid a complex conjugate relation at the second and third harmonic"*). Thus, the length of the adjustment line conductor in Applicants' claim 1 is set to avoid complex conjugate impedances, whereas the directional couplers of Ishizaki and Yamazaki do not talk about the length of an adjustment line.

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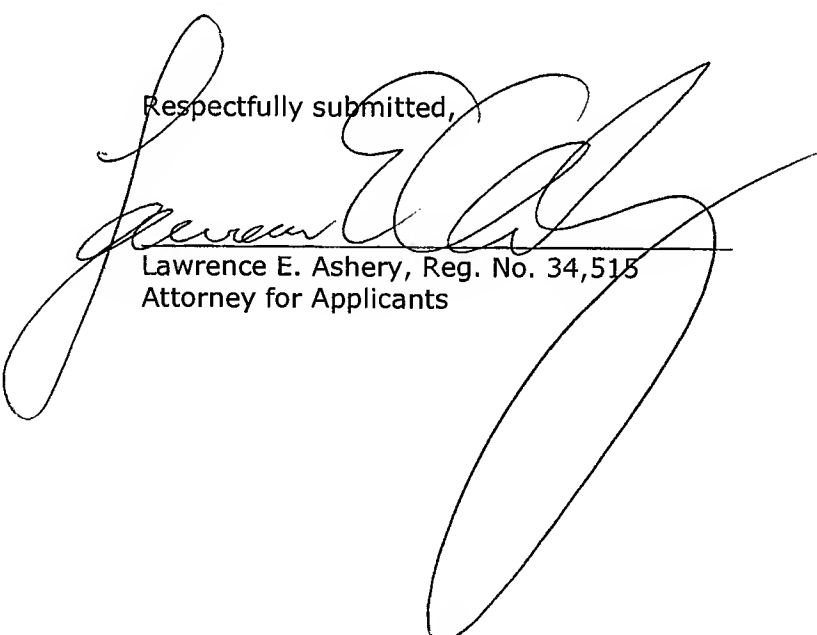
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It is because Applicants include the feature of "*an adjustment line conductor of a set line that is connected between the filter and the antenna switch circuit ... the set length of the adjustment line conductor prevents the first impedance and the second impedance from being complex conjugates of each other at harmonic frequencies of the fundamental frequencies, wherein the first impedance and the second impedance are measured from the connection point,*" that the following advantages are achieved. The advantage is the ability to obtain a favorable amount of attenuation in the band, and specifically, at the harmonic frequencies. Accordingly, for the reasons set forth above, claim 1 is patentable over the art of record.

Claims 2-11 include all the features of the claim 1 from which they depend. Thus, claims 2-11 are also patentable over the art of record for the reasons set forth above.

In view of the amendments and arguments set forth above, the above-identified application is in condition for allowance, which action is respectfully requested.

Respectfully submitted,



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